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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/754,815	01/09/2004	Yuta Nakaya	FUJO 20.845	1554

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KATTEN MUCHIN ROSENMAN LLP
575 MADISON AVENUE
NEW YORK, NY 10022-2585

EXAMINER	
LE, NHAN T	

ART UNIT	PAPER NUMBER
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/754,815	NAKAYA ET AL.	
	Examiner	Art Unit	
	Nhan T. Le	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5,6 and 11-16* is/are rejected.

7)☒ Claim(s) *4 and 7-10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-3, 11-15, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimata et al (US 20020190900) in view of Applicant Admitted Prior Art.

As to claims 1, 16, Kimata teaches a communications apparatus using an adaptive antenna having in a high frequency unit an antenna unit including a plurality of antenna elements (see fig. 35, numbers 11-1, 11-N; N antennas, paragraphs 0042-0043) and a plurality of adjustment units (see fig. 5, numbers 134-1, 134-N, paragraphs 0043-0044) provided corresponding to the plurality of antenna elements for adjusting directivity of an entire antenna, comprising: an interference wave element extraction units (see fig. 5, numbers 52-1, 52-L, paragraphs 0043-0044) extracting an interference wave element other than a requested signal to be received by said communications apparatus from a received signal by the antenna unit; and an adaptive control unit (see fig. 5, numbers 134-1, 134-N, paragraphs 0043-0044) performing adaptive control on the adjustment value such that the extracted interference wave element can be minimized. Kimata fails to teach the adjustment values of the adjustment units are

perturbed in a one symbol time used in said communications apparatus. Applicant Admitted Prior Art teaches the adjustment value of the adjustment unit is perturbed in a on symbol time used in said communications apparatus (see fig. 4, page 6, lines 16-25, lines 1-19). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Applicant Admitted Prior Art into the system of Kimata in order to update the variable reactance value of the antenna.

As to claim 2, the combination of Kimata and Applicant Admitted Prior Art teaches wherein the plurality of antenna elements comprise a feed antenna element and one or more no-feed antenna elements near the feed antenna element; the adjustment units (see Kimata fig. 5, numbers 11-1, 11-N, paragraphs 0043-0044) are variable reactance circuit unit connected to each no-feed antenna element; and the adjustment value is a variable reactance value (see Applicant Admitted Prior Art fig. 3, page 6, lines 16-25, page 7, line 1-19).

As to claim 3, the combination of Kimata and Applicant Admitted Prior Art teaches wherein: the adjustment units are weight units corresponding to each of the plurality of antenna elements (see Kimata fig. 5, numbers 134-1, 134-N, paragraphs 0043-0044); the antenna unit further comprises a composing circuit unit for composing a weighted signal from each antenna element (see Applicant Admitted Prior Art fig. 1, number 55, page 4, lines 6-25, page 1-7); and the adjustment value is a weight value of the weight unit (see Kimata fig. 3, numbers 133-1, 133-L, paragraphs 0043-0044).

As to claim 11, the combination of Kimata and Applicant Admitted Prior Art teaches wherein said communications apparatus comprises the antenna unit (see Kimata fig. 5, numbers 11-1, 11-N, paragraphs 0043-0044), the interference wave element extraction unit (see Kimata fig. 5, numbers 52-1, 52-L, paragraphs 0043-0044), and the adaptive control unit (see Kimata fig. 5, numbers 134-1, 134-L, paragraphs 0043-0044); the antenna unit comprises a plurality of diversity branches provided in spatially different positions (see Kimata fig. 5, numbers 11-1, 11-N, paragraph 0045); and said communications apparatus further comprises a weight composite unit for weight composing a signal from each diversity branch (see Kimata fig. 5, numbers 133-1, 133-L, paragraphs 0045).

As to claim 12, the combination of Kimata and Applicant Admitted Prior Art teaches wherein the adaptive control unit is in each of the plurality of diversity branches, and independently performs control of each adjustment value (see Kimata fig. 5, numbers 134-1, 134-L, paragraphs 0043-0045).

As to claim 13, the combination of Kimata and Applicant Admitted Prior Art teaches comprising a cooperative control unit performing cooperative control of each adaptive control unit for each adaptive control unit in the plurality of diversity branches (see Kimata fig. 5, numbers 134-1, 134-L, paragraphs 0043-0045).

As to claim 14, the combination of Kimata and Applicant Admitted Prior Art further comprising an adjustment value setting unit setting to a predetermined value an adjustment value of an adjustment unit other than a part of adjustment units (see

Kimata paragraph 0066) so that an influence of adjustment by a part of adjustment units can be evaluated in the plurality of adjustment units.

As to claim 15, the combination of Kimata and Applicant Admitted Prior Art wherein said adaptive control unit performs control of the adjustment value in a steepest gradient method (see Kimata paragraphs 0058-0060).

2. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kimata et al (US 20020190900) in view of Applicant Admitted Prior Art further in view of Matsuoka (US 20020085653).

As to claim 5, the combination of Kimata and Applicant Admitted Prior Art fails to teach wherein said interference wave element extraction unit extracts an interference wave element using a result of a Fourier transform of a digitized signal of the received signal. Matsuoka teaches wherein said interference wave element extraction unit extracts an interference wave element using a result of a Fourier transform of a digitized signal of the received signal (see paragraph 0006). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of Matsuoka into the system of Kimata and Applicant Admitted Prior Art in order to remove the influence of time delay within the guard intervals.

3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kimata et al (US 20020190900) in view of Applicant Admitted Prior Art further in view of McCorkle (US 7,006,553).

As to claim 6, the combination of Kimata and Applicant Admitted Prior Art fails to teach wherein said interference wave element extraction unit extracts an interference

wave element using a result of a Wavelet transform of a digitized signal of the received signal. McCorkle teaches wherein said interference wave element extraction unit extracts an interference wave element using a result of a Wavelet transform of a digitized signal of the received signal (see col. 21, lines 1-12). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the teaching of McCorkle into the system of Kimata and Applicant Admitted Prior Art in order to suppress the signal interference.

Allowable Subject Matter

Claims 4, 7-9, 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claim 4, the applied reference fails to teach wherein said communications apparatus converts a transmission data sequence into a parallel data sequence, and each of the converted data sequences is transmitted in parallel by a plurality of carriers having different frequencies; and said interference wave element extraction unit extracts as the interference wave element a virtual subcarrier element as a carrier not used in data communications in a plurality of carriers as cited in the claim.

As to claim 7, the applied reference fails to teach wherein said interference wave element extraction unit extracts an interference wave element using received data obtained when the adjustment values are perturbed in one of two symbols and received data obtained when the adjustment values are not perturbed in the other symbol as cited in the claim.

As to claim 10, the applied reference fails to teach wherein said interference wave element extraction unit extracts an interference wave element from the received signal obtained in a format in which a section of perturbing the adjustment values of the adjustment units in the one symbol and a section of not perturbing any adjustment value of the plurality of adjustment units are included as cited in the claim.

Response to Arguments

4. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nhan T. Le whose telephone number is 571-272-7892. The examiner can normally be reached on 08:00-05:00 (Mon-Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on 571-272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

N.Le

Nhan Le

EDWARD F. URBAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600